Docket No.: 59549(71360)
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Tatsuya Masuki et al.

Application No.: 10/616,538 | Confirmation No.: 1953

Filed: July 9, 2003 | Art Unit: 1772

For: RESIN CONTAINER | Examiner: W. Aughenbaugh

DECLARATION OF YOSHIHIRO KAYANO UNDER 37 CFR 1.132

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

1. I, Yoshihiro KAYANO, declare and say that I am a resident of Japan. My residence address is 11-Bankan, No. 907, Higashinomachi, 3-1, Ryokuen 4-chome, Izumi-ku, Yokohama-shi, Kanagawa-ken, Japan.

2. I currently hold the position of group manager of the group belonging one of inventor Hisashi TAHARA of U.S. Patent Application Serial No. 10/616,538 in Mitsubishi Engineering-Plastics Corporation (Assignee) and engage the study of polymer processing technology especially injection molding and CAE (refer to USP 6,866,811, Polymer 38 (8) (1997) pp. 1885-1902, Polymer 39 (4) (1998) pp. 821-834, Polymer 39 (13) (1998) pp. 2835-2845 and Polymer 37 (20) (1996) pp. 4505-4518).

3. I have read and am familiar with U.S. Patent Application Serial No. 10/616,538 ("the '538 application") and certain work related to the invention described in that application. I have also read and understand the Office Action dated December 4, 2006, in connection with the '538 application.

4. I understand that the Examiner has stated that "Applicant has not shown how "flatness" is distinguished from "surface waviness". However, the terms "flatness", "surface waviness", and "sink mark depth" are described in the '538 application and would be understood by one of ordinary skill in the art, as discussed below.

5. Flatness. "Flatness" refers to the difference from the standard surface of a geometrically corrected surface plate in the flat surface (e.g., of a resin container). A deformed or warped article has poor flatness. Flatness can be measured by placing a specimen on a corrected surface plate of a three-dimensional structure measuring apparatus as a reference surface, and measuring the flatness of a region of a flat portion within 2 mm of the outer periphery of the flat portion. The deviation the standard surface is then calculated by a least squares analysis. See also page 27, lines 6-27 of the present specification. Thus, flatness is the difference from the standard surface of a geometrically corrected surface plate in the flat surface of the resin container. I believe that one of ordinary skill in the art would readily understand the term "flatness" and would understand how this property is measured.

6. Comparison of "flatness" with "surface waviness " or "sink mark depth". The '538 specification includes several Examples and Comparative Examples. For Examples 1 and 3, and Comparative Example 1, the values of "flatness," "surface waviness " and "sink mark depth" were calculated and the results are shown in the Table below. These measurements were performed by one of inventor Hisashi TAHARA of '538 application and I have reviewed the methodology and results. In each case a polycarbonate resin was used.

Table

	Material of core insert	Flatness	Surface Waviness	Sink mark depth
Example 1	Partially stabilized zirconia	0.335 mm	5 μm	0.2 μm
Example 3	Partially stabilized zirconia with metal film facing	0.287 mm	5 μm	0.7 μm
Comp. Example 1	Steel material	0.63 mm	85 μm	4.7 μm

As shown in the Table, "flatness" shows the difference from the standard surface of a geometrically corrected surface plate in the flat surface of the resin container. Note that the flatness value is much larger than the values for "surface waviness" or "sink mark depth" (mm vs. μm).

The difference between Examples 1 and 3 and Comparative Example 1 is the material of the core insert in the mold cavity in the injection molding process. As shown above, in Example 1, a partially stabilized zirconia core insert was used; in Example 3, a partially stabilized zirconia with metal film facing was used as a core insert; and in Comparative Example 1, a (conventional) steel material core insert was used. As seen from the Table, the flatness, surface waviness, and sink mark depth are all superior for the articles of the Examples relative to the Comparative Examples.

7. Distinction between surface waviness and sink mark depth. Surface waviness is a measure of the roughness of the surface of the article (e.g., the resin container). Surface waviness is usually measured using a surface roughness tester (e.g., "SURFCOM" manufactured by TOKYO SEIMITSU CO., LTD.). Exhibit A, attached hereto (and also submitted as Exhibit C with the Amendment filed July 24, 2006 in the '538 application), shows one example of a "primary profile" measured by

a surface roughness tester. In that primary profile (see the upper Figure of Exhibit A), the transverse axis shows the length measured in along a flat surface, and the vertical axis shows the surface roughness (in the cross-sectional direction) of the surface. In this primary profile, "surface waviness" is shown as the measured value of difference between the maximum height and the minimum height in the cross-sectional dimension of the flat surface across the measured length (the transverse axis direction, 30 mm). The measurement of surface waviness is also described at page 28, lines 3 to 8 of the '538 specification.

"Sink mark depth" shows the "concavity and convexity (irregularities)" within a more narrow range than the measurement range of surface waviness. That is, measurement of sink mark depth is performed in areas of the surface having localized defects or "sink marks". Sink mark depth is determined using a surface roughness tester in an area having a sink mark and therearound. Then, in the measured primary profile (see the lower Figure of Exhibit A), the irregularities in the partial range are measured. The vertical axis scale of the lower Figure of Exhibit A is magnified compared to the upper Figure. The sink mark depth is measured by using a surface roughness tester to obtain a primary profile of a region in which sink marks are formed, and then, from the primary profile, a distance between a tangent line of a higher inflection point and a tangent line of a lower inflection point is determined as the sink mark depth. In the upper Figure of Exhibit A, the part where sink marks are formed is seen at 13 to 18 mm in the transverse axis (indicated by two arrows). Usually the value of "sink mark depth" is smaller than the value of surface waviness. The measurement of sink mark depth is also described at page 28, lines 14 to 21 of the '538 specification.

8. Relationship between the description in the present specification and the JIS B 0601-2001 reference. As noted above, the '538 specification describes the measurement of surface waviness. This description is as follows (page 28, lines 3-8):

> The surface waviness (Pz) of the flat portion (1A) is a value obtained by measuring the difference between a maximum height and a minimum height which are parallel with an ideal plane of the surface to

be measured, over a maximum measuring length of 30 mm using a surface roughness tester.

In addition, the '538 specification provides (at page 28, lines 22-23) that "the above surface waviness and sink mark depth are measured according to JIS B 0601-2001." This means that surface waviness and sink mark depth are measured by use of a "primary profile (waviness curve)" as described in JIS B 0601-2001 (that is, by the methods shown in the upper and lower Figures of Exhibit A). Thus, by use of the obtained "primary profile (waviness curve)", values of "surface waviness" and "sink mark depth" can be measured according to the methods described in the '538 specification.

9. In my opinion, the '538 specification describes the measurement of "flatness", "surface waviness" and "sink mark depth" in sufficient detail that one of ordinary skill in the art would understand the meanings of the terms and how to measure these properties. One of skill in the art would readily appreciate the distinctions between the properties of "flatness", "surface waviness" and "sink mark depth".

10. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title XVIII of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

April 18, 2007
Dated

Yoshihiro KAYANO